TECHNICAL SERVICE MANUAL

HEAVY-DUTY BRACKET MOUNTED PUMPS
SERIES 120 and SERIES 124
MODELS J, K, KK, L, LQ, LL AND LM

SECTION 3
BULLETIN TSM-120-124-V
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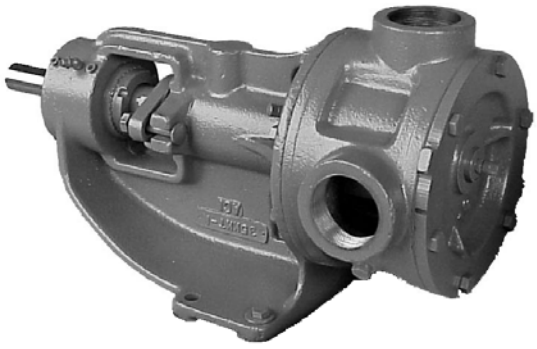
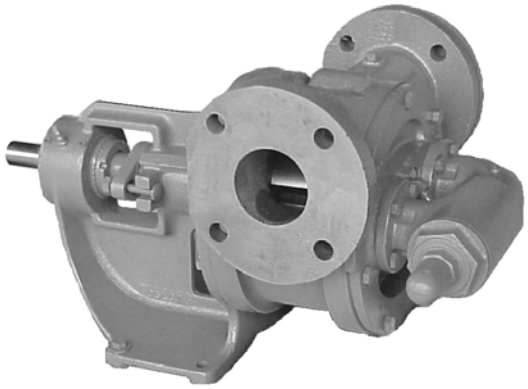


KK-124

INTRODUCTION

The illustrations used in this manual are for identification purposes only and cannot be used for ordering parts. Obtain a parts list from the factory or a Viking representative. Always give complete name of part, part number and material with model number and serial number of pump when ordering repair parts. The pump model number and serial number are on the nameplate.

In the Viking model number system, basic size letters are combined with series number.



LL-124 – Shown with 180 Deg. Ports

UNMOUNTED PUMP	UNITS
J-124	Units are designated by the unmounted pump model numbers followed by "Arrangement" indicating drive style.
K-124	
KK-124	
L-124	
LQ-124	13-Direct Connected
LL-124	53-Belt Driven
LM-124	70-Commercial Speed Reducer
	90-Commercial Gear Motor

This manual deals only with Series 120 and 124 Heavy Duty Bracket Mounted Pumps. Pump specifications and recommendations are listed in Catalog Section 3, series 124 Heavy Duty Bracket Mounted Pumps.

LM-124

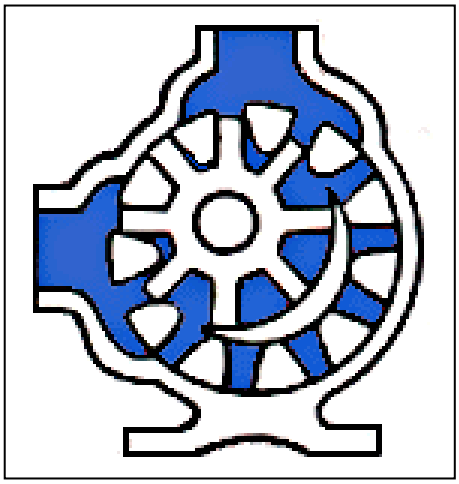
DANGER

BEFORE OPENING ANY VIKING PUMP LIQUID CHAMBER (PUMPING CHAMBER, RESERVOIR, RELIEF VALVE ADJUSTING CAP FITTING ETC.) BE SURE:

1. THAT ANY PRESSURE IN CHAMBER HAS BEEN COMPLETELY VENTED THROUGH SUCTION OR DISCHARGE LINES OR OTHER APPROPRIATE OPENINGS OR CONNECTIONS.
2. THAT THE DRIVING MEANS (MOTOR, TURBINE, ENGINE, ETC.) HAS BEEN "LOCKED OUT" OR MADE NON-OPERATIONAL SO THAT IT CANNOT BE STARTED WHILE WORK IS BEING DONE ON PUMP.
3. THAT YOU KNOW WHAT LIQUID THE PUMP HAS BEEN HANDLING AND THE PRECAUTIONS NECESSARY TO SAFELY HANDLE THE LIQUID. OBTAIN A MATERIAL SAFETY DATA SHEET (MSDS) FOR THE LIQUID TO BE SURE THESE PRECAUTIONS ARE UNDERSTOOD.

FAILURE TO FOLLOW ABOVE LISTED PRECAUTIONARY MEASURES MAY RESULT IN SERIOUS INJURY OR DEATH.

ROTATION: Rotary gear pumps operate equally well in a clockwise or counterclockwise rotation. The shaft rotation determines which port is suction and which is discharge. Port in area where pumping elements (gear teeth) come out of mesh is suction port.



PRESSURE RELIEF VALVES:

1. Viking pumps are positive displacement pumps and must be provided with some sort of pressure protection. This may be a relief valve mounted directly on the pump, an inline pressure relief valve, a torque limiting device or a rupture disk.
2. There are relief valve options available on pump models. Options may include a return to tank relief valve and a jacketed relief valve. Pumps equipped with a jacketed head are not available with a relief valve.
3. If pump rotation is reversed during operation, pressure protection must be provided on *both* sides of pump.
4. Relief valve bonnet (see page 11) must *always* point towards suction side of pump. If pump rotation is reversed, remove pressure relief valve and turn end for end. Figures 2 and 3 show 2 possible configurations, both have side suction and top discharge. A right-hand pump turns in the opposite direction to the left-hand pump.
5. Pressure relief valves cannot be used to control pump flow or regulate discharge pressure.

Figure 2, Right Hand Pump

SPECIAL INFORMATION

SPECIAL MECHANICAL SEALS can be installed either next to rotor hub or behind the bracket bushing.

Extra care must be taken in repair of pumps with mechanical seals. Read and follow all special information supplied with pump.

MAINTENANCE

Series 124 pumps are designed for long, trouble-free service life under a wide variety of application conditions with a minimum of maintenance. The points listed below will help provide long service life.

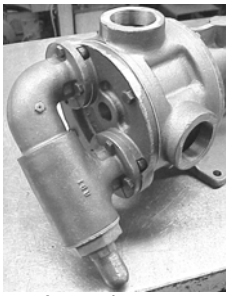


Figure 3, Left Hand Pump

LUBRICATION: All pumps are greased at the factory. External lubrication must be applied slowly with a grease gun to all lubrication fittings every 500 hours of operation with multi-purpose grease. Do not over-grease. Applications involving very high or low temperatures will require other types of lubrication. Consult factory with specific lubrication questions.

PACKING ADJUSTMENT: New packed pumps require initial packing adjustment to control leakage as packing "runs in". The adjustment should be made while the pump is operating with normal operating pressure on the discharge of the pump. Make adjustments carefully and do not over-tighten packing gland. Evenly tighten the gland fasteners until the leak is reduced to a very slow drip. If over tightened the packing will over heat, score the shaft and reduce life. After initial adjustment, inspect periodically for increased leakage and re-adjust. Once the gland has been tightened to the stuffing box face, loosen the packing gland and add one ring to the stuffing box, then adjust again. Refer to instructions under Disassembly, page 5, and Assembly, page 6, regarding repacking pump.

CLEANING PUMP: Keep pump as clean as possible. This will facilitate inspection, adjustment and repair work and help prevent overlooking a dirt covered grease fitting.

STORAGE: If pump is to be stored, or not used for six months or more, pump must be drained and a light coat of lubricant and rust preventative suitable to the application must be applied to all internal pump parts. Lubricate fittings and apply grease to pump shaft extension. Rotating the pump shaft by hand, one complete revolution every 30 days to circulate the oil.

SUGGESTED REPAIR TOOLS: The following tools must be available to properly repair Series 124 pumps. These tools are in addition to standard mechanics' tools such as open-end wrenches, pliers, screwdrivers, etc. Most of the items can be obtained from an industrial supply house.

1. Soft Headed hammer
2. Allen wrenches (some mechanical seals and set collars)
3. Packing hooks, flexible (packed pumps)
   Small for 0.25 inch and 0.31 inch cross section packing
   Large for 0.38 inch and up cross-section packing
4. Mechanical seal installation sleeve
5. Bearing locknut wrench or hammer and punch
6. Spanner wrench, adjustable pin type for use on end caps (Source: #482 J. H. Williams & Co. or equal) or hammer and punch
7. Brass bar
8. Arbor press

Strainers: Use a strainer on the suction side of the pump to prevent foreign material from entering the pump causing damage to the gears, and casing or lock-up the pump. Keep the strainer on the suction side of the pump clean and free of debris. A blocked strainer will not allow sufficient liquid to reach the pump. The lack of liquid reaching the pump will create cavitation. Cavitation is when the liquid vaporizes on its way to the pump, then returns to a liquid form on the surfaces of the pump. This is very noisy, damaging to a pump, and seriously affects the output.

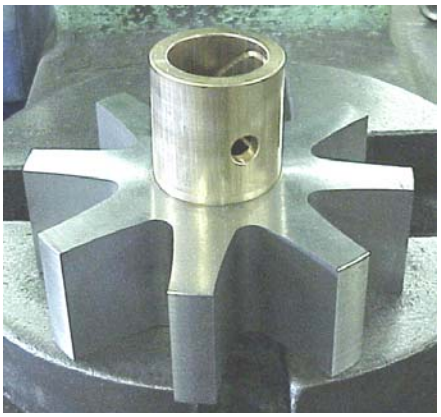


Figure 4, Idler bushing press fit

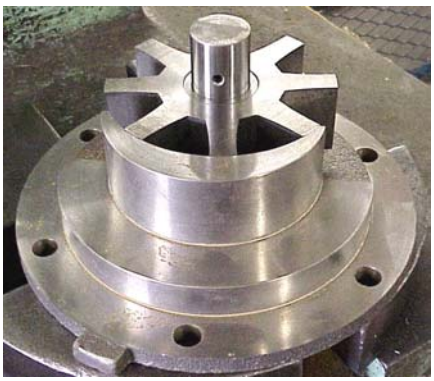


Figure 5, Pressing the idler pin

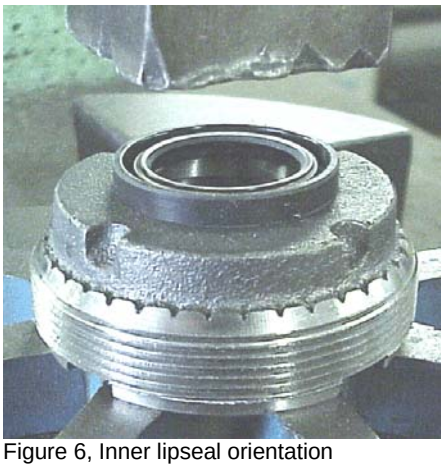
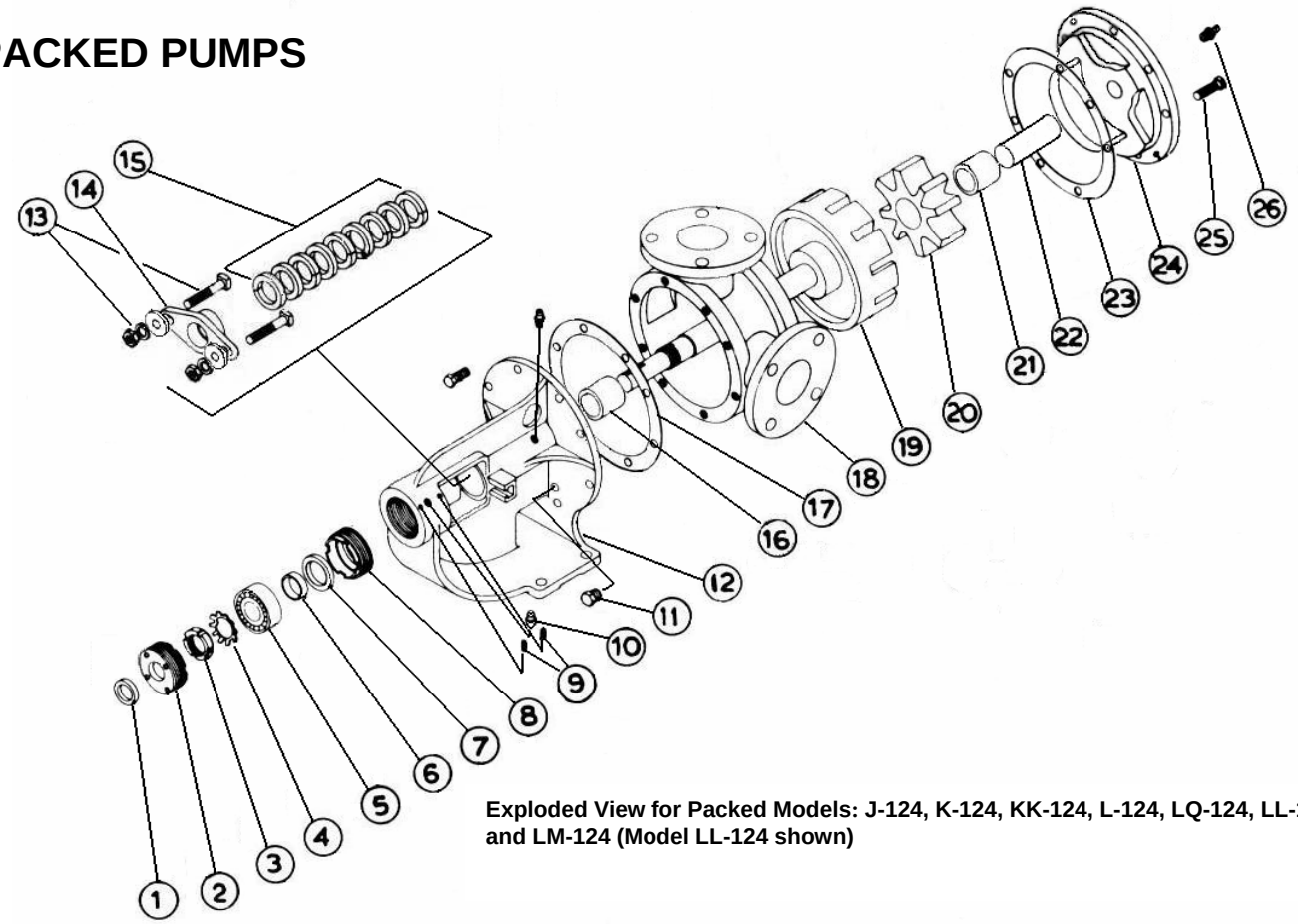


Figure 6, Inner lipseal orientation

Figure 7, Outer lipseal orientation

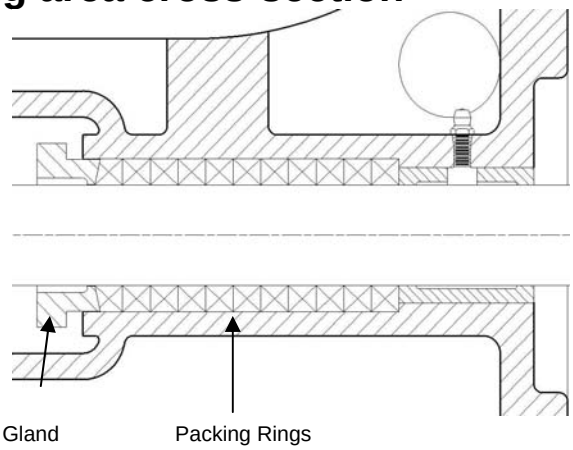
PACKED PUMPS



Exploded View for Packed Models: J-124, K-124, KK-124, L-124, LQ-124, LL-124, and LM-124 (Model LL-124 shown)

ITEM	NAME OF PART	ITEM	NAME OF PART	ITEM	NAME OF PART
1	Lip Seal (Outer)	10	Grease Fitting	19	Rotor and Shaft Ass'y
2	End Cap (Outer)	11	Pipe Plug	20	Idler
3	Lock nut	12	Bracket	21	Idler Bushing
4	Lock washer	13	Packing Gland Fasteners	22	Idler Pin
5	Ball Bearing	14	Packing Gland	23	Casing Gasket
6	Bearing Spacer	15	Packing Rings	24	Head
7	Lip Seal (Inner)	16	Bracket Bushing	25	Head Fasteners
8	End Cap	17	Casing Gasket	26	Grease Fitting
9	Setscrew	18	Casing		

Packing area cross-section



DISASSEMBLY

1. Mark head and casing before disassembly to insure proper reassembly. The idler pin, which is offset in pump head, must be positioned toward and centered between the port connections to allow for proper flow of liquid through pump. Figure 18, page 9.

   Remove head from pump. *Do not allow idler to fall from idler pin.* Tilt top of head back and down when removing to prevent this. The idler and bushing should stay on the idler pin. If pump is furnished with pressure relief valve, remove it from the head and refer to Pressure Relief Valve Instructions, page 11.

   The gaskets must be totally removed. Use new gasket when assembling pump.

1. Remove idler and bushing assembly from the idler pin.

1. Loosen the setscrews on the bearing end of the bracket, and remove the outer end cap. Figure 22, page 10.

2. Remove the packing gland fasteners.

3. Insert a length of hardwood or brass through a port opening between rotor teeth to keep shaft from turning. Bend up the tab of lock washer, which is engaging the lock nut, and with a lock nut wrench remove the lock nut and lock washer from the shaft. Remove the wood or brass from the rotor.

4. Remove the packing gland fastener, and pull the gland out of the stuffing box.

5. Tap the shaft forward with a soft headed hammer, and pull it out of the bracket and bushing assembly being careful not to damage the bracket bushing.

6. Remove the packing gland through the side of the bracket.

7. The packing may be removed with a packing puller. In some cases two pullers will be required, or pushed out with a chisel and a hammer from the bushing side (be careful not to damage the bushing). If removal still cannot be done with the pullers or chisel, stand the pump on the bearing end of the bracket and press the bushing out through the packing area. This will remove all of the packing with the bushing.

8. Remove the inner end cap with lip seal. To remove the bearing from the bracket. Tap the bearing forward with a soft headed hammer

9. Clean all parts thoroughly and examine for wear and damage. Check lip seals, ball bearing, bushings and idler pin and replace if necessary. Check all other parts for nicks, burrs, excessive wear and replace if necessary.

10. Wash bearings in clean solvent. Blow out bearings with compressed air. Do not allow bearings to spin; turn them slowly by hand. Spinning bearings will damage race and balls. Make sure bearings are clean, then lubricate with non-detergent SAE 30-weight oil and check for roughness. Roughness can be determined by turning the inner and outer race opposite directions by hand. Note if the motion is smooth and free or rough and stiff. Smooth and free is desired. Figure 10.

11. The casing can be checked for wear or damage while mounted on the bracket.

12. The bracket bushing can also be inspected while still in the bracket. If replacement is necessary, stand the unit on the casing and push the bushing out with a round bar through the bearing end of the bracket.

Figure 8, Pressing the Bracket bushing

Figure 9, Alternate the packing cuts

Figure 10, Pushing in the packing rings into the stuffing box

ASSEMBLY

Viking supplies pumps with a wide variety of bushing materials. These materials should not all be treated the same. See “Bushing Material” page 10.

1. Press the idler bushing into the idler gear. If carbon graphite, refer to Installation of Carbon Graphite Bushings, page 10. Figure 4, page 3

2. Using the idler and bushing assembly as a guide, press the idler pin into the head with the tapped hole into the head and the lubrication hole or groove directed toward the center of the crescent on the head. Figure 5, page 3

3. Press lip seals into the end caps, figure 6 and 7 page 3 (lip facing away from the threads). Put the inner end cap in the bracket as shown in figure 11.

4. Install the bracket bushing. If bracket bushing has a lubrication groove, install bushing with the lubrication hole aligned with the grease-fitting hole on the bracket. Figure 8, page 5. If carbon graphite, refer to Installation of Carbon Graphite Bushings, page 10.

5. Use only new packing suitable for the liquid being pumped. Install the packing, staggering the joints from one side of shaft to other, Figure 9, page 5. If needed, lubricate packing rings with oil, grease or graphite to aid assembly. A length of pipe will help to seat each packing ring, Figure 10, page 5.

6. Install packing gland, cap screws and nuts. Make sure the gland is installed square and nuts are loosely assembled. Figure 12. Refer to “Packing Adjustment” page 2 after the pump is assembled and installed.

7. Coat the shaft of the rotor and shaft assembly with non-detergent SAE 30 weight oil. Start the end of shaft in the bracket bushing while turning counter clockwise, slowly push the shaft through the packing. Continue until the rotor and shaft assembly cannot move any further.

8. Slide bearing spacer over shaft, past the threads and against the shoulder on the shaft. Figure 13.

9. With the ball bearing on the bench, hold the grease gun tip against the bearing and apply grease to the top of the bearing all the way around the diameter. Place the ball bearing on the shaft and push it against the bearing spacer. See figure 14, page 8. Hold the grease gun tip against the bearing and apply grease to the top of the bearing as before.

10. Put the lock washer and lock nut on shaft. Insert length of hardwood or brass through port opening between rotor teeth to keep shaft from turning. Tighten the lock nut. One tab of the lock washer will line up with a slot in the lock nut. Bend that tab into the slot. Figure 15, page 8.

11. Put the outer end cap and lip seal assembly on the shaft and turn it into the bracket until it is against the bearing.

12. Place one casing gasket and the bracket on the casing. Start the bolts into the casing threads, Figure 16, page 8. Turn the shaft to determine if the rotor is rotating freely inside the casing. If not, tap the casing with a softheaded hammer until the rotor does not touch the casing. Tighten the bolts evenly on the casing.

13. Install the head and idler assembly on pump with two casing gaskets between them. If the pump head and casing were marked before disassembly simply match up the markings. If not, be sure the idler pin, which is offset in pump head, is positioned between the ports. Tighten head cap screws evenly. Figure 1 page 2 shows the pin and crescent in the appropriate orientation to the ports.

14. Adjust pump end clearance. Refer to End Clearance Adjustment, page 10.

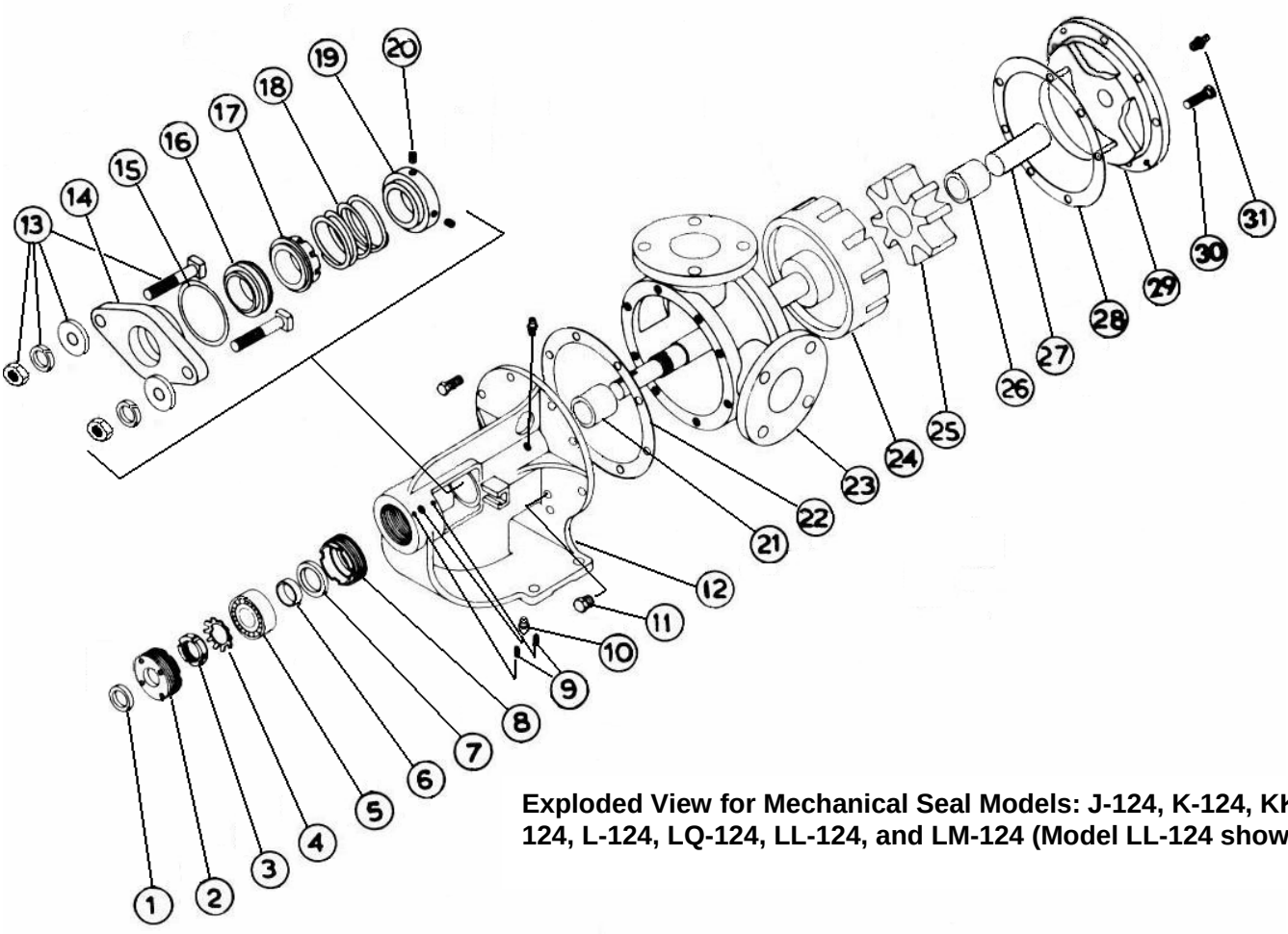
15. Lubricate all grease fittings with multi-purpose grease.

Figure 11, Endcap and inner lip seal

Figure 12, Gland & shaft installed

Figure 13, Bearing spacer

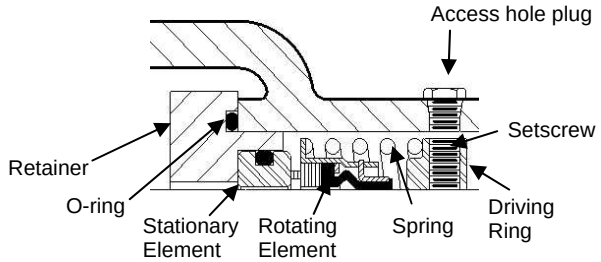
MECHANICAL SEAL PUMPS

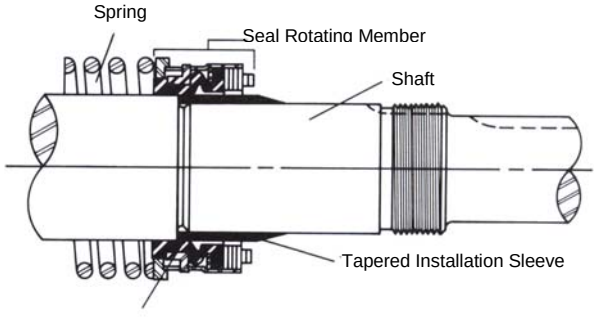


Exploded View for Mechanical Seal Models: J-124, K-124, KK-124, L-124, LQ-124, LL-124, and LM-124 (Model LL-124 shown)

ITEM	NAME OF PART	ITEM	NAME OF PART	ITEM	NAME OF PART	ITEM	NAME OF PART
1	Lip seal (Outer)	9	Set Screws	17	Rotating Seal Element	25	Idler
2	End cap (Outer)	10	Grease Fitting	18	Seal Spring	26	Idler Bushing
3	Lock Nut	11	Pipe Plug	19	Driving Ring	27	Idler Pin
4	Lock Washer	12	Bracket	20	Set crews	28	Casing Gasket
5	Ball Bearing	13	Retainer Fasteners	21	Bracket Bushing	29	Head
6	Bearing Spacer	14	Seal Seat Retainer	22	Casing Gasket	30	Head Fasteners
7	Lip Seal (Inner)	15	Retainer O-ring	23	Casing	31	Grease Fitting
8	End cap (Inner)	16	Stationary Seal Seat	24	Rotor and Shaft Ass'y		

Mechanical Seal Cross-Section





Coat the shaft, tapered installation sleeve and inner diameter of mechanical seal with lubricant as recommended by your seal supplier.

DISSASSEMBLY

1. Mark head and casing before disassembly to insure proper reassembly. The idler pin, which is offset in pump head, must be positioned toward and equal distance between port connections to allow for proper flow of liquid through pump.

2. Remove head from pump. *Do not allow idler to fall from idler pin.* Tilt top of head back when removing to prevent this. If pump is furnished with pressure relief valve, it need not be removed from head or disassembled at this point. Refer to Pressure Relief Valve Instructions, page 11

   The gaskets must be totally removed. Use new gaskets when assembling a pump.

3. Remove idler and bushing assembly from the head and idler pin.

4. Loosen the setscrews on the end caps and remove the outer end cap only. Figure 22, page 10.

5. Insert length of hardwood or brass through port opening between rotor teeth to keep shaft from turning. Bend up tab of lockwasher and remove the lock nut and lock washer from shaft.

6. Remove the fasteners from the seal seat retainer and pull it away from the seal chamber to free the spring on the seal. Remove the pipe plug from the bracket in the side of the seal chamber and loosen the 2 setscrews on the driving ring through the tapped hole in the side of the seal chamber.

7. Carefully tap the shaft forward and remove the rotor and shaft assembly from the pump. Hold the seal seat retainer so that it does not fall and damage the stationary seat of the seal.

8. Remove the rotating seat of seal and the driving ring from the bracket.

9. The stationary seal seat can be removed from the seal seat retainer by gently prying the seal seat out with a small flat screwdriver.

10. Remove the inner end cap.

11. To remove the bearing from the bracket. Tap the bearing forward with a soft headed hammer

12. Clean all parts thoroughly and examine for wear or damage. Check lip seals, ball bearing, bushing and idler pin and replace if necessary. Check all other parts for nicks, burrs, excessive wear and replace if necessary.

13. Wash bearings in clean solvent. Blow out bearings with compressed air. Do not allow bearings to spin; turn them slowly by hand. Spinning bearings will damage race and balls. Make sure bearings are clean, then lubricate with non-detergent SAE 30 weight oil and check for roughness. Roughness can be determined by turning outer race by hand. Be sure shaft is free from nicks, burrs and foreign particles that might damage bracket bushing. Scratches on shaft in seal area will provide leakage paths under mechanical seal.

14. Casing and bracket bushing can be checked for wear or damage while assembled.

15. If needed, remove the bracket bushing with the casing still mounted by standing the unit on the casing in a press and proceed to push the bushing out of the bracket.

Figure 14, Ball bearing

Figure 15, Lock-nut & lock-washer

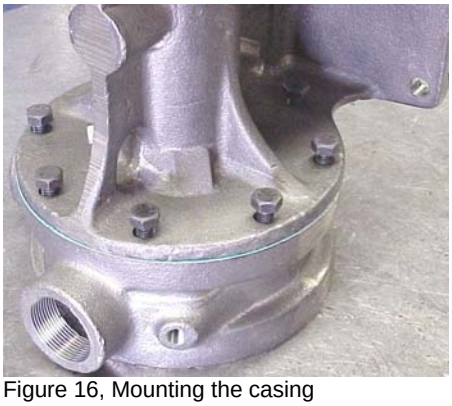


Figure 16, Mounting the casing

Figure 17, Head mounted

Figure 18, Tighten down the outer endcap

ASSEMBLY

Standard Mechanical Seal

Figure 19, Stationary set install

The seal used in this pump is simple to install and good performance will result if care is taken during installation.

The principle of the mechanical seal is that contact between the rotary and stationary members. These parts are lapped to a high finish and their sealing effectiveness depends on complete contact.

Viking furnishes a number of heavy-duty pumps with special mechanical seals. These special seals are not discussed in TSM124. Information is available by contacting the factory. When requesting special seal information, be sure to give pump model number and serial number.

Viking supplies pumps with a wide variety of bushing materials. These materials should not all be treated the same. See “Bushing Material” page 10.

Figure 20, Installing the Seal

1. Perform steps 1 through 4 of Packed Pump Assembly.

   Never touch sealing faces with anything except clean hands or clean cloth. Minute particles can scratch the seal faces and cause leakage.

2. Press the stationary seat into the seal seat retainer while protecting the face as pictured in figure 19.

   Prior to installing rotating portion of mechanical seal, prepare and organize rotor shaft, head and idler assemblies and appropriate gaskets for quick assembly.
   Once rotating portion of mechanical seal is installed on rotor shaft, it is necessary to assemble parts as quickly as possible to insure that seal does not stick to shaft in wrong axial position. The seal should be expected to stick to the shaft after several minutes setting time.

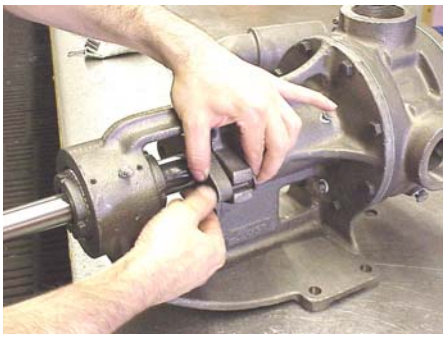


Figure 21, Tightening the seal.

3. Clean the bracket seal housing bore and the shaft. Make sure both are free from dirt and grit. Coat the inner diameter of the seal housing bore, and the shaft with a lubricant recommended by your seal supplier.

4. Place the sleeve installation guide on the shaft.

5. Start the end of shaft in the bracket bushing and slowly push the shaft through. Continue until the shaft begins to emerge from the seal chamber.

6. Place the spring on driving ring and with the setscrews already started in the threads of the driving ring, put the spring and ring on the shaft.

7. Slide rotary member, lapped contact surface facing away from spring, over installation sleeve on shaft until it is against spring. Do not compress spring.

8. Place the seal seat retainer with the stationary seat facing the seal chamber on the shaft. Figure 20, page 9.

9. Guide the rotating element past the steps in the shaft, and over the tapered guide. Carefully push the rotor and shaft assembly all of the way into the bracket.

10. Remove the tapered installation sleeve from the shaft.

11. Do steps 8 through 14 of the "Packed Pump Assembly"

12. Push the spring into the seal chamber until the driving ring is visible through the tapped hole in the seal chamber. Then turn the shaft until the setscrews can be tightened down.

13. Push the seal assembly into the seal chamber and attach the fasteners loosely. Figure 21.

14. Check that the retainer is centered and square with the shaft.

15. Tighten the fasteners evenly and in small increments.

16. Replace the pipe plug in the hole on the side of the stuffing box.

17. Pneumatic test your pump for leaks. See Page 12

18. Lubricate all grease fittings with multi-purpose grease.

INSTALLATION OF CARBON GRAPHITE BUSHINGS

When installing carbon graphite bushings, extreme care must be taken to prevent breaking. Carbon graphite is a brittle material and easily cracked. If cracked, the bushing will quickly disintegrate. Using a lubricant and adding a chamfer on the bushing and the mating part will help in installation. The additional precautions listed below must be followed for proper installation:

1. A press must be used for installation.
2. Lubricate the bushing and bore with soapy water.
3. Be certain bushing is started straight.
4. Do not stop pressing operation until bushing is in proper position. Starting and stopping will result in a cracked bushing.
5. Check bushing for cracks after installation.

BUSHING MATERIALS

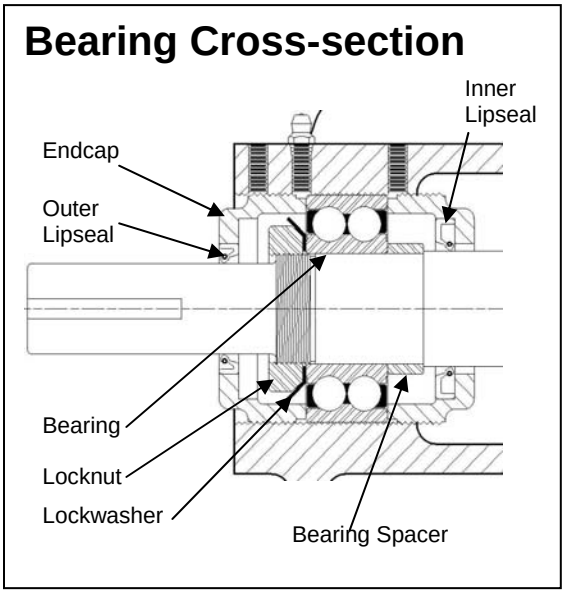
Viking bushing material recommendations.

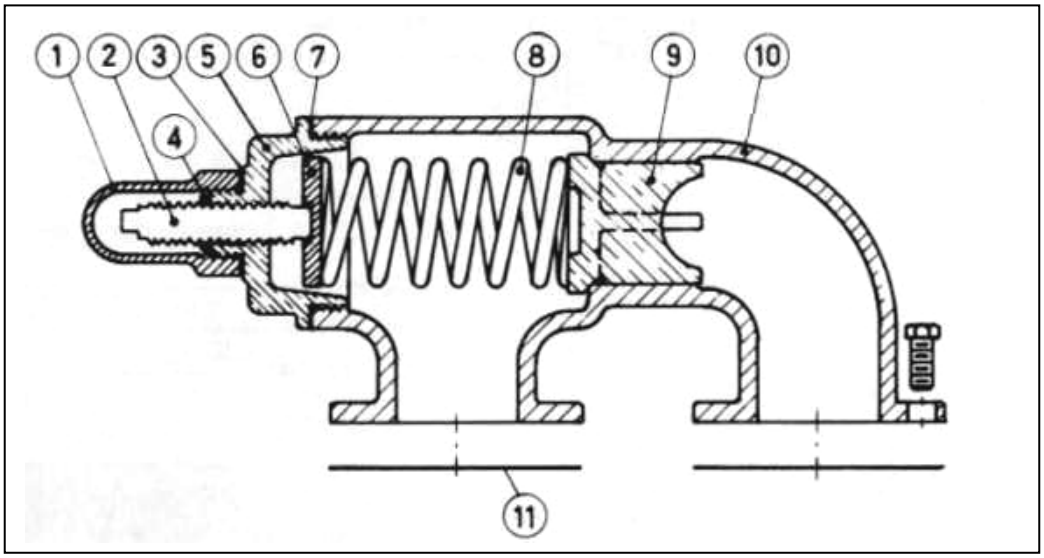
Material	Appearance	Installation Lubricant	Operating Lubrication
Bronze	Yellowish	Not required	Required
Carbon	Black	Soapy Water	Not required
Iron	Steel	Oil or anti-seize	Required
Nitralloy	Steel	Oil or anti-seize	Required
Tungsten	Steel	Oil or anti-seize	Not required

Figure 22, Loosening the set screws

END CLEARANCE ADJUSTMENT

1. Loosen setscrews over outer and inner end caps. Figure 22.
2. Turn inner end cap clockwise, viewed from shaft end, about 2 or 3 turns.
3. Turn outer end cap clockwise until the rotor is tight against the head and the shaft cannot be turned.
4. Make a reference mark on bracket end, opposite a notch on outer end cap.
5. Back off the outer end cap required number of notches to obtain the required end clearance. Each notch is 0.0025 inches. Consult the factory for your specific end clearance requirement. Tighten down the setscrews on the outer and inner end caps.





ITEM	NAME OF PART	ITEM	NAME OF PART	ITEM	NAME OF PART	ITEM	NAME OF PART
1	Bonnet	4	Bonnet o-ring	7	Cap Gasket	10	Poppet
2	Adjusting Screw	5	End cap	8	Spring	11	Relief valve port gasket
3	Lock nut	6	Spring Guide	9	Casing		

Figure 23, Poppet, spring, & spring retainer

PRESSURE RELIEF VALVE INSTRUCTIONS
DISASSEMBLY

Mark valve and head before disassembly to insure proper reassembly.

1. Remove bonnet.
2. Measure and record length of adjusting screw protruding out of the end cap.
3. Loosen lock nut and back out adjusting screw until spring pressure is released.
4. Remove relief valve cap, spring guide, spring and poppet from valve body. Clean and inspect all parts for wear or damage and replace as necessary.

ASSEMBLY

Reverse procedures outlined under Disassembly. If valve is removed for repairs, be sure to replace in same position. Relief valve adjusting screw cap must *always* point towards suction side of pump. If pump rotation is reversed, remove the relief valve and turn end for end. Refer to Figures 2, 3, page 2.

Figure 24, Spring & Retainer

PRESSURE ADJUSTMENT

If a new spring is installed or if pressure setting of pressure relief valve is to be changed from that which the factory has set, the following instructions must be carefully followed:

1. Carefully remove the bonnet, which covers the adjusting screw. Figure 26, page 12.
2. Loosen the lock nut, which locks the adjusting screw so that the pressure setting will not change during operation of pump. Figure 25, Page 12
3. Install a pressure gauge in discharge line for actual adjustment operation.
4. Turn adjusting screw in to increase pressure and out to decrease pressure.
5. Closing a valve in the piping will stop all flow. A pressure gauge on the discharge port of the pump will show the maximum pressure that the relief valve will allow while pump is in operation.

IMPORTANT

In ordering parts for pressure relief valve, always give model number and serial number of pump as it appears on nameplate and name of part wanted. When ordering springs, be sure to give pressure setting desired.

PNEUMATIC TESTING

1. Seal the ports with pipe plugs or plates and gaskets. Be sure to provide a male air line connection to one of the ports.
2. Apply air pressure to the pump.
3. Spray or brush the externals with soapy water and watch for growing air bubbles around the seal, fitting, and gaskets. Figure 27.
4. Relieve the pressure from the pump.
5. Carefully disconnect the air supply.
6. Remove the plugs or covers from the ports.
7. Return the pump to service.

Figure 25, End cap, screw, & nut

Figure 26, Bonnet

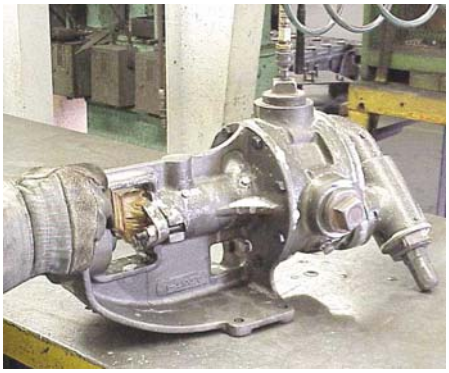


Figure 27, Pneumatic testing

Troubleshooting

No Discharge:	Pump priming may be required
	Suction lift is too great
	Relief valve is stuck open
	Strainer needs cleaning
	Wrong direction of rotation
Insufficient Discharge Volume	Air leeks in suction
	Speed is to slow
	Relief valve is set to low
	Suction lift too high for liquid handled. This is very important on hot or
	volatile fluids
	Suction line is not submerged
	Suction piping too small in diameter, or foot valve is to small
	Wrong rotation
	Pump internals worn
	Air or gases in suction piping
	Viscosity is higher than expected
Insufficient Pressure	Relief valve set to low
	Air or gases in the fluid
	Pump internals are worn
	Insufficient volume being pumped
	Wrong rotation
	Improper clearances in the internals
Loss of suction after a period	Suction line is leaking (letting air into the pump)
Of operation	Packing is too loose or the mechanical seal is leaking
	Leaking Gaskets
Excessive power requirement	Viscosity to high
	Discharge pressure is to high
	Insufficient lubrication
	Shaft or rotor bent, misalignment or packing gland is to tight
Noisy operation with good	Misalignment of coupling
Performance	Worn bearings
Noisy operation with poor or	Cavitation – Not enough fluid getting to the pump
No performance	Worn bearings or bushings
Leaking around the shaft	Packing is loose, or needs replacement
	Mechanical seal is damaged or misaligned
	Shaft is scored
	Shaft is bent

PUMP INSPECTION REPORT

DATE: _____

PUMP MODEL: _____ SERIAL NUMBER: _____

CUSTOMER: _____

SALES ORDER NUMBER: _____ REFERENCE: _____

APPLICATION AND/OR PROBLEM: _____

_____

_____

_____

_____

DESCRIPTION	STANDARD DIMENSIONS	EX. CL. (IF ANY)	ACTUAL	WEAR
ROTOR O.D.				
ROTOR I.D.				
ROTOR TOOTH LENGTH				
IDLER O.D.				
IDLER (BUSHING) I.D.				
IDLER TOOTH LENGTH				
IDLER PIN O.D.				
SHAFT O.D.				
SHAFT BUSHING I.D.				
CRESCENT LENGTH				
CASING I.D.				
END CLEARANCE				

COMMENTS & RECOMMENDATIONS: _____

_____

_____

_____

_____

_____

_____

NOTES

VIKING PUMP CANADA

WARRANTY

Viking warrants all products manufactured by it to be free from defects in workmanship or material for a period of one (1) year from date of startup, provided that in no event shall this warranty extend more than eighteen (18) months from the date of shipment from Viking. If, during said warranty period, any products sold by Viking prove to be defective in workmanship or material under normal use and service, and if such products are returned to Viking's factory at Windsor, Ontario, transportation charges prepaid, and if the products are found by Viking to be defective in workmanship or material, they will be replaced or repaired free of charge, FOB. Windsor, Ontario.

Viking assumes no liability for consequential damages of any kind and the purchaser by acceptance of delivery assumes all liability for the consequences of the use or misuse of Viking products by the purchaser, his employees or others. Viking will assume no field expense for service or parts unless authorized by it in advance.

Equipment and accessories purchased by Viking from outside sources which are incorporated into any Viking product are warranted only to the extent of and by the original manufacturer's warranty or guarantee, if any.

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IDEX CORPORATION